

USSR

UDC: 621.314.2(088.8)

GARBUZ, M. A.

"A Compensation Winding"

USSR Author's Certificate No 257597, filed 4 Aug 67, published 24 Nov 70  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V363 P)

Translation: This patent introduces a compensation winding for compensating magnetic scattering fields such as transformer fields. The winding consists of two concentrically arranged sections on a coil. As a distinguishing feature of the patent, the design is simplified and dimensions are reduced by arranging the above-mentioned sections in a single row and creating an opposed magnetic field.

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UDC: 621.382.2

ALFEROV, Zh. I., ANDREYEV, V. M., GARBUZOV, D. Z., and TRUKAN, M. K.

"Radiation Recombination in Epitaxial Compensated Gallium Arsenide"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2015-2026

Abstract: The results of the experiments described in this paper were presented to the All-Union Conference on Recombination Radiation and Spontaneous Light Sources (Theses, 3, 1971, Leningrad). The purpose of the experiments was to investigate radiation recombination in epitaxial GaAs p-n structures doped with donor and acceptor materials. Light excitation was used for studying the spectral characteristics of the compensated material luminescence, and the kinetics of the radiating junctions was investigated under pulse excitation. The specimens were grown by the liquid method in an open system on n-GaAs substrates, with the solution cooled from 825 to 810° C, and were doped with germanium and tellurium to provide acceptors and donors respectively. A table of the specimens and their characteristics is given together with oscillograms of the light pulses for some of the structures, and curves of the

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UDC: 621.382.2

ALFEROV, Zh. I., et al, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2015-2026

quantitative results are plotted. The authors thank A. N. Yermakova for her assistance in preparing the specimens, B. I. Shklovskiy, I. S. Shlimak, and A. L. Efros for their consultations, and V. M. Tuchkevich for his interest in the work.

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USSR

UDC: 621.382.3

ALFEROV, Zh. I., AMOSOV, V. I., GARBUZOV, D. Z., ZHILYAYEV, Yu. V., KONNIKOV, S. G., KOP'YEV, P. S., and TROFIN, V. G.

"Investigating the Dependence of the Luminescent Characteristics of n and p Type  $\text{GaP}_x\text{As}_{1-x}$  and  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  Solid Solutions"

Leningrad, Fizika i tekhnika poluprovodnikov. No 10, 1972, pp 1879-1887

Abstract: The present article is the latest of a series published by the first-named author in collaboration with these or other researchers regarding the nature of photoluminescence spectra in solid solutions of  $\text{GaP}_x\text{As}_{1-x}$  and  $\text{Al}_x\text{Ga}_{1-x}\text{As}$ . In the present paper, results are given of experimental investigations into the position of the fringe band maximum radiation and the relative radiation intensity in the band as they depend on the composition of the solid solutions of both n and p types. The experimental specimens were in the form of epitaxial layers obtained by the liquid and gas transport method, their compositions being determined by the microroentgen spectral method with the JXA-5A analyzer. The luminescence was excited by a DRSh-250 lamp with a filter system removing the yellow and green mercury lines, and the radiation spectra were recorded by the MDR-2 monochromator with a grating of 1/2

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UDC: 621.382.3

ALFEROV, Zh. I., Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1879-1887

600 lines/mm. The radiation receivers were germanium photodiodes or the FEU-22. The authors express their gratitude to N. V. Klepikova and V. P. Kuz'min for their assistance with the experiments, and V. M. Tuchkevich for his interest in the work.

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USSR

UDC 621.332.3

ALFEROV, ZH. I., ANDREYEV, V. M., GARBUZOV, D. Z., MOROZOV, YE. P., PORTNOY, YE. L., TROFIM, V. G., KHALFIN, V. B.

"Current Flow Mechanisms in the Presence of Electroluminescence of p-GaAs-n- $\text{Al}_x\text{Ga}_{1-x}\text{As}$  Heterojunctions"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 366-375

Abstract: A study was made of the electroluminescent properties of p-GaAs-n- $\text{Al}_x\text{Ga}_{1-x}\text{As}$  heterojunctions with a different level of alloying of the p and n-regions. The electroluminescence spectra and the dependencies of the radiation intensity on the voltage applied to the heterojunction were investigated in the temperature range of 77-400° K. In heterojunctions with an acceptor concentration in the p-region of  $\approx 10^{19} \text{ cm}^{-3}$  and a donor concentration in the n-region  $> 3 \cdot 10^{17} \text{ cm}^{-3}$  in the temperature range of 77-200° K, the radiation in the gallium arsenide band is caused by tunneling of the electrons in the p-GaAs through the barrier in the conduction band. The experimental results obtained are compared with the theoretical calculation made within the framework of the model usually used when investigating tunneling in Schottky barriers.

In heterojunctions with weakly alloyed n-region ( $N_D \leq 3 \cdot 10^{17} \text{ cm}^{-3}$ )

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ALFEROV, ZH. I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 366-375

there is two-way injection of the carriers. The electron and hole current components responsible for emission in the gallium arsenide and red bands of the electroluminescent spectrum are caused by thermal injection of the carriers. With an increase in the alloying level of the n-region ( $3 \cdot 10^{17} < N_D < 10^{18} \text{ cm}^{-3}$ ),

the electron component of the current increases quickly and the relative radiation intensity in the gallium arsenide band builds up correspondingly. At reduced temperatures the electron component of the current in such heterojunctions is caused by tunneling of the carriers through the barrier in the conduction band. The thermal injection mechanism of the current responsible for recombination in the gallium arsenide band is retained after 300° K in heterojunctions with  $N_D \leq 7 \cdot 10^{17} \text{ cm}^{-3}$ . In heterojunctions with strongly alloyed n-region ( $N_D \geq 2 \cdot 10^{18} \text{ cm}^{-3}$ ), the transparency of the barrier in the conduction

band is so great that its presence has no noticeable effect on the dependence of the electron component of the current on voltage. At low voltages  $eV_n < E_g$

(GaAs) the radiation in these heterojunctions is caused by diagonal tunnel junctions of the n-Al<sub>x</sub>Ga<sub>1-x</sub>As conduction band and the p-GaAs valence band.

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USSR

UDC 621.357.6:66.067.3(088.8)

TARASOV, Yu. A., GARBIZOV, N. V., TSAKHNOVSKIY, I. M., VASIL'KO, N. P.

"Galvanoplastic Method of Manufacture of Metal Filters"

USSR Author's Certificate No 305209, Filed 27/01/70, Published 13/07/71,  
(Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No  
3 L331 P by K. S. Pedan).

Translation: A galvanoplastic method is suggested for the manufacture of metal filters by means of electrolytic precipitation of a metal layer onto a matrix, differing in that in order to increase the quality of the filters, the process is performed in an electrolyte containing 0.5-4% of a suspension of insoluble organic particles, and the coatings produced are heat treated until the enclosed organic particles are fully burned out. Example. An Ni coating is applied to a matrix from an electrolyte with a composition of (in g/l):  $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$  300;  $\text{H}_3\text{BO}_3$  30, temperature 50-55°,  $D_c$  2-4 a/dm<sup>2</sup> and pH 4-4.5. When a powder of an insoluble organic compound such as polyethylene is dispersed in this electrolyte at between 0.5 and 4% with subsequent heat treatment at 400-450° for 1-1.5 hr, it is possible to regulate the quantity of pores in the Ni coatings produced. The pore size in the filter can be changed by changing the dimensions of the particle introduced to the electrolyte. It is pointed out that this method allows the production of filters with high filtering capacity of many metals and alloys.

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USSR

UDC: 621.313.522:538.4

BONDARCHUK, A. P., GARBUZOV, V. N., ZASLAVSKIY, B. I., OSERED'KO, Yu. S.,  
KHANZHINA, Ye. I., YANTOVSKIY, Ye. I.

"An Open-Cycle MHD Electric Power Plant Based on Natural Gas With Chemical  
Regeneration of Exhaust-Gas Heat"

Teplotekhn. Probl. Pryamogo Preobrazovaniya Energii /Heat Engineering Problem  
of the Direct Conversion of Energy -- Collection of Works/, No 4, Kiev, Nauk.  
Dumka Press, 1973, pp 10-19 (Translated from Referativnyy Zhurnal Turbostroyen-  
iye, No 11, 1973, Abstract No 11.49.153)

Translation: Results are presented from analysis of various factors: magnetic  
induction B, quantity of additive, and effects and air heating temperature on  
the thermodynamic effectiveness  $\eta_{st}$  of an MHD electric power plant (MHDEPP)  
with a frame channel of the MHD generator and a steam turbine and thermochemical  
processing of the fuel (water conversion) using natural gas as the fuel. Cal-  
culations of the MHD power plant are presented for a consumption of combustion  
products of 2000 kg/sec using two types of magnetic system (MS): nonsupercon-  
ducting and superconducting. For the nonsuperconducting MS,  $\eta_{st}$  of the  
MHDEPP changes within limits of 50-49% and 51-52% as B is changed from 5 to

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BONDARCHUK, A. P., et al., Teplotekhn. Probl. Pryamogo Preobrazovaniya Energii, No 4, 1973, pp 10-19

6.5 T at air temperatures of 1100 and 1500°K respectively. For a superconducting MS with  $B=6$  T with a power plant capacity of 2500 Mw,  $\eta_{st}$  increases by 3.5-6.5% as air temperature is increased from 1100 to 1500°K. It is established that the presence of end sectors causes an increase in total length of the MHD generator and an increase in losses to cooling, reducing  $\eta_{st}$ . Injection of  $K_2CO_3$  with 1 wt. % K decreases  $\eta_{st}$  by 1.5%. Problems of water conversion of methane are studied. It is concluded that the MHD power plant discussed is quite promising. 5 Figures; 13 Biblio. Refs. M. I. Osipov

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UDC [621.362:538.4] 017.001.24

GARBUZOV, V.N., KHANZHINA, YE.I.

"On The Effect Of Regeneration In The Vapor Part Of The Cycle And Some Losses In Efficiency Of An Open-Cycle Magnetohydrodynamic Electric Power Plant"

V sb. Teplotekhn. probl.pryamogo preobrazov.energii (Heat-Engineering Problems Of Direct Energy Conversion--Collection Of Works), Issue 2, Kiev, "Nauk.dumka," 1971, pp 11-22 (from RZh--Elektrotehnika i energetika, No 12, Dec 1971, Abstract No 12A174)

Translation: The paper considers the effect of regeneration in the vapor part of the cycle, with the presence of low-potential losses of heat in various elements of a magnetohydrodynamic electric power plant (e.g., magnet, channel), on the efficiency of the electric power plant. Computations are presented on the efficiency of an open-cycle magnetohydrodynamic electric power plant with various losses of the pressure in the heat exchange apparatus located behind the diffuser. 5 ill. 4 ref. [Power-Engineering Institute im. G.M.Krzhizhanovskiy, Moscow]

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1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--WASHING OF SUSPENSION POLYMERS IN A ROTOR PULSATION APPARATUS -U-  
AUTHOR--(05)--MAYOROV, B.A., GARBUZOVA, G.L., SVICHAR, L.I., DERKO, P.P.,  
NOVICHKOV, A.N.  
COUNTRY OF INFO--USSR  
SOURCE--PLAST. MASSY 1970, (3), 59-60  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--POLYVINYL ACETAL RESIN, CELLULOSE RESIN, CHEMICAL SUSPENSION,  
MANUFACTURING METHOD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0579 STEP NO--UR/0191/70/000/003/0059/0060  
CIRC ACCESSION NO--AP0119497  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119497

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WASHING PROCESS OF POLY(VINYL BUTYRAL) AND ET CELLULOSE IN A ROTOR PULSATION APP. WAS STUDIED ANAL. TO DET. THE OPTIMUM NO. OF WASHING CYLCES UNDER MANUFG. CONDITIONS. THE WASHING WAS EFFICIENT, REQUIRED LESSER AMTS. OF WASHING AGENTS, AND COULD BE USED AS A CONTINUOUS PROCESS.

UNCLASSIFIED

USSR

UDC 621.378.325

GARDASH'YAN, V. M., CHAPLYGIN, V. A.

"Electro-Optical Gate for a Laser With Reduced Controlling Voltage"

Moscow, Kvantovaya Elektronika, No 2, 1971, pp 65-68

Abstract: An electro-optical laser gate is considered for operation on a voltage which gives a phase lead of  $\pi/4$ . The gate is essentially a series arrangement of a polarizer, a crystal with linear electro-optical effect and a prism with total internal reflection. The axes of the prism and the electro-optic crystal (under voltage) are parallel to each other and make an angle of  $45^\circ$  with the axes of the polarizer, which passes only the light vector  $E_{x1}$  and attenuates  $E_{y1}$  emission. The gate is switched from the open to the closed state (and vice versa) by rotating the prism through a right angle about an axis perpendicular to the edge of the prism. The experimental energy characteristics of a ruby laser with such a gate are presented. The proposed gate can be used in lasers with unpolarized emission. In this case, the controlling voltage is 4.5 kV for a KDP polarizer in a neodymium glass laser (wavelength 1.06  $\mu$ ). Five figures, bibliography of two titles.

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Luminescence

USSR

UDC 541.138.2:546

GARDIN, YU. YE., KULABUKHOV, V. M., ODYNETS, L. L., PERSHINA, G. A., Petrozavodsk State University Imeni O. V. Kuusinen

"Mechanism of Galvanoluminescence During Anodic Polarization of Aluminum Oxide"

Moscow, Elektrokimiya, Vol VII, No 8, 1971, pp 1184-1185

Abstract: A study was made of the spectral composition of the galvanoluminescence during anodic polarization of systems made up of aluminum, aluminum oxide and an electrolyte. The oxide layer was obtained by anodic oxidation of aluminum (99.99% pure) in two different electrolytes: a) an aqueous solution of boric acid (30 g/liter) with borax (0.05 g/liter) and b) an aqueous solution of oxalic acid (30 g/liter). The galvanoluminescence spectra are plotted for the two given cases. In two series of experiments the structure of the oxide layers remained invariant; however, the galvanoluminescence spectra corresponded to the electrolyte in which the measurement was taken. The results obtained agree with the previously stated proposition [S. P. Maminova, Elektrokimiya, No 1, 365, 1965] that in systems made up of a metal (semiconductor) oxide and electrolyte galvanoluminescence

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GARDIN, YU. YE., et al, Elektrokhimiya, Vol VII, No 8, 1971, pp 1184-1185

constitutes electrochemical luminescence and is connected with electrochemical reactions at the oxide/electrolyte interface.

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USSR

UDC 541.1382:541

GARDIN, Yu. Ye., ODYNETS, L. L., and TUMAKOV, V. S., Petrozavodsk State University imeni O. V. Kuusinen

"Galvanoluminescence Upon Electrochemical Oxidation of Tantalum and Aluminum"

Moscow, Elektrokimiya, Vol 6, No 10, Oct 70, pp 1562-1564

Abstract: A study was made of the basic regularities in the luminescence which occurs during electrochemical oxidation of tantalum and aluminum. The results of the study indicate that the luminescence of fully formed specimens results from the ionic current component. The anode luminescence is apparently a type of electrochemiluminescence, related to electrode reactions occurring at the oxide-electrolyte interface.

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USSR

UDC 577.391+575.1+633.15:  
575.1

VALODZIN, U. H., GARDZEY, I. A., and GARDZEY, H. M., Institute of Genetics and Cytology, Academy of Sciences Belorussian SSR  
"Postradiation Recovery of Primary Cytogenetic Damage and Radioresistance of Plants"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk, No 3, 1970, pp 73-79

Abstract: Dynamics of changes in chromosomal aberrations in cells of the high-heterosis corn hybrid Minskiy-1 and its original parental forms were studied. It is shown that a more intensive decrease in the quantity of cells with chromosomal aberrations is observed in the hybrid at the end of the first mitotic cycle. This indicates the presence of more pronounced reparative processes. It is assumed that one of the causes of the increased radioresistance of heterosis hybrids is their capacity for more intensive recovery from cytogenetic damage.

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USSR

UDC 577.391+575.1+633.15:  
575.1

VALODZIN, U. H., GARDZEY, I. A., and GARDZEY, H. M., Institute of Genetics and Cytology, Academy of Sciences Belorussian SSR

"Postradiation Recovery of Primary Cytogenetic Damage and Radioresistance of Plants"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk, No 3, 1970, pp 73-79

Abstract: Dynamics of changes in chromosomal aberrations in cells of the high-heterosis corn hybrid Minskiy-1 and its original parental forms were studied. It is shown that a more intensive decrease in the quantity of cells with chromosomal aberrations is observed in the hybrid at the end of the first mitotic cycle. This indicates the presence of more pronounced reparative processes. It is assumed that one of the causes of the increased radioresistance of heterosis hybrids is their capacity for more intensive recovery from cytogenetic damage.

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USSR

UDC 577.391+575.1+633.15:575.1

VALODZIN, U. G., GARDZEY, I. A., and GARDZEY, H. M.

"Postradiation Restoration of Primary Cytogenetic Injuries and the Radioresistance of Plants"

Minsk, Izvestiya Akademii nauk BSSR, Seriya Biologicheskikh Nauk, No 3, 1970, pp 73-79

Translation: The study deals with the dynamics of changes in chromosome aberrations of a high-heterosis corn hybrid Minskiy-1 and its original parent forms. The most intensive reduction in the number of cells with chromosome aberrations was observed at the end of the first mitotic cycle. This indicates the presence of more pronounced reparative processes. It is suggested that one reason for the increased radioresistance of heterosis hybrids is their capacity for more intensive restoration of cytogenetic damage.

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USSR

UDC 577.391+575.1+633.15:575.1

VALODZIN, U. G., GARDZEY, I. A., and GARDZEY, H. M.

"Postradiation Restoration of Primary Cytogenetic Injuries and the Radioresistance of Plants"

Minsk, Izvestiya Akademii nauk BSSR, Seriya Biologicheskikh Nauk, No 3, 1970, pp 73-79

Translation: The study deals with the dynamics of changes in chromosome aberrations of a high-heterosis corn hybrid Minskiy-1 and its original parent forms. The most intensive reduction in the number of cells with chromosome aberrations was observed at the end of the first mitotic cycle. This indicates the presence of more pronounced reparative processes. It is suggested that one reason for the increased radioresistance of heterosis hybrids is their capacity for more intensive restoration of cytogenetic damage.

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GARDZIYENKA, L. M., YERMAKOW, P. Z.

"General Annual Meeting of the Academy of Sciences of the Belorussian SSR"

Minsk, Vestsi Akademii Navuk Belaruskay SSR, No 3, 1970, pp 113-116

Abstract: The Secretary of the Presidium of the Academy, A. S. MAKHNACH, presented a report on the realization of fundamental research in mathematics, nuclear physics and technology. The development of scientific methods in all Belorussian establishments, in metallurgy and plastics, and the use of gases to cool the nuclear reactors, are just a few of Belorussian accomplishments. Geological, stratigraphical, and biological resources of Belorussia were technologically studied and developed. The results of scientific progress is contained in more than 2000 articles by the members of the Academy. Textiles and machine and instrument making have been augmented by development of automatization.

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GARDZIYENKA, L. M., et al, Izvesti Akademii Navuk Belaruskay SSR,  
No 3, 1970, pp 113-116

There were 7,996 people working in the various departments of the Academy of Sciences of BSSR as of February 1, 1970; of these, 107 were doctors of science and 814, candidates. The aspirants have increased by 104.4%. In conclusion, the Secretary pointed to immense work ahead in solving many problems, perfecting the structure of educational institutions, raising the level of scientific research, etc.

Academicians A. N. SEWCHANKA, M. A. DAROZHKIN, B. V. YERAF-  
YEYEW, P. P. RAGAVOY, M. V. TURBIN, YA. R. KANAVALAW, I. S. KRAW-  
CHANKA, M. S. KAZLOW, G. V. BAGAMOLAW, M. V. SMOL'SKI; and Corre-  
sponding Members K. P. BUSLAW, V. M. TREYER, AND L. V. VALADZ'KO  
passed the judgment on the reports.

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CSO: 1841-W

- END -  
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Pathology

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USSR

UDC 616.981.553-092.9

MATKOVSKIY, V. S., TSYBULYAK, G. N., ZUBIK, T. M., ZHUK, L. N., AKIMOV, G. A.,  
GAREMN, Ye. M., GOGLOZHA, R. L., KUSTOV, N. A., PASHKOVSKIY, E. V., and  
TIHOPEYEV, V. V., Chair of Infectious Diseases, Chair of Military Field Surgery,  
and Chair of Nervous Diseases, Military Medical Academy imeni S. M. Kirov,  
Leningrad

"The Pathophysiology of Experimental Botulism"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 3, 1971,  
pp 16-19

Abstract: A study was carried out of the disturbance of external respiration, gas content and acid-base state of blood, and of hemodynamic shifts with severe experimental intoxication with botulinus toxin. Fifty dogs were intoxicated with type A botulinus toxin. At the time of administration and at the peak of intoxication, the gas content of arterial and venous blood, hemoglobin, hematocrit, specific weight of blood and plasma, and content of sodium, potassium, lactic and pyruvic acid were determined. External respiration was studied by means of a type T35 spirometabolograph and circulation by the modified mechanical cardiographic method. Biocurrents of the cerebral cortex were recorded on a four-channel electroencephalograph. At the peak of

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USSR

MATKOVSKIY, V. S., et al, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 3, 1971, pp 16-19

intoxication, a reduction of per minute respiration with a resulting lowered level of oxyhemoglobin in arterial blood, and respiratory acidosis were noted. EKG data revealed predominantly hypoxic shifts in the myocardium, and the EEG data -- inhibitory processes in the cerebral cortex. Intensified cardiac activity served as a compensatory mechanism for respiratory insufficiency. The secondary shifts in the function of organs and systems in connection with disturbances of a metabolic and functional nature played a vital role in the pathogenesis of botulinus intoxication. Morphological shifts in the CNS were apparently caused largely by disturbances in the microcirculation and were reversible. In treating severe botulinus intoxication, special attention should be paid to timely correction of external respiratory insufficiency, with artificial ventilation of lungs most expedient.

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USSR

UDC 616.981.553

AKIMOV, G. A., LOBZIN, V. S., GAREMIN, Ye. M., ZHUK, L. N., and ZUBIK, T. M.,  
Chair of Nervous and Infectious Diseases, Military Medical Academy imeni  
Kirov, Leningrad

"Data on the Diagnosis and Pathogenesis of Botulism"

Moscow, Zhurnal Nevropatologii i Psikhiiatrii imeni S. S. Korsakova, Vol 71,  
No 7, 1971, pp 1,033-1,038

Abstract: Observation of six patients with botulism showed that gastro-intestinal disorders developed in only three of them; three patients exhibited only disturbances of the nervous system expressed primarily in oculomotor and and bulbar disorders. In order to investigate changes in the nervous system during botulism, 24 dogs were given intramuscular injections of botulinus toxin type A in a dose of 2,500 MLD for mice per kg. Various branches of the nervous system of 12 of the dogs were subjected to a pathohistological examination after the dogs were sacrificed on the 3d to 12th day after administration of the toxin. No signs of selective action of the toxin on the central motor structures were detected. There was evidently selective action on peripheral motor neurons. Correlation of clinical and morphological data indicated that the determining factor in the pathogenesis of paralytic syndromes

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USSR

AKIMOV, G. A., et al, Zhurnal Nevropatologii i Psikhatrii imeni S. S. Korsakova, Vol 71, No 7, 1971, pp 1,033-1,038

was disturbance of neuromuscular transmission. All branches of the nervous system were involved in the pathological process, but the morphological changes in the nervous system, which were of the type of an acute swelling, were generally reversible. Although slow recovery of the dogs that had not been sacrificed began on the 10th - 12th day after administration of the toxin, muscular weakness persisted for one month. The most active systems with the highest metabolism (the oculomotor apparatus and the bulbar system) were apparently affected first, but they also recovered fastest.

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1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SELECTION OF A SPECIMEN FOR CONTROLLING THE EXTENT OF CONTAMINATION  
OF FERROCHROMIUM -U-  
AUTHOR-(03)-TOPCHIY, S.F., GAREVSKIKH, I.A., SAMSONOV, A.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZAVCO. LAB. 1970, 36(3), 302-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--FERROCHROMIUM, NONMETALLIC INCLUSION, SILICON, METAL INGOT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/0530 STEP NO--UR/0032/70/036/003/0302/0304  
CIRC ACCESSION NO--AP0126278  
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126278

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN FEER CONTG. SMALLER THAN OR EQUAL TO 0.1-0.3PERCENT SI THE LEAST NONMETALLIC IMPURITIES WERE FOUND IN THE CENTER OF THE INGOT, WHILE THE TOP CONTAINED MOST OF THE IMPURITIES AND THE BOTTOM WAS BETWEEN THESE TWO. IN FEER CONTG. 1.5-1.7PERCENT SI THE DISTRIBUTION OF IMPURITIES DID NOT FOLLOW ANY PATTERN. THE CONTENT OF GASEOUS IMPURITIES WAS NOT AFFECTED BY THE LOCATION OF THE SAMPLE. GENERALLY, O CONCD. MOSTLY AT THE TOP OF THE INGOT, WHEREAS N WAS CONFINED MOSTLY TO THE BOTTOM OF THE INGOT. IN MOST OF THE INGOTS THE DISTRIBUTION OF SI IN C FREE FEER WAS UNIFORM; HOWEVER, IN EVERY LARGE INGOTS THERE WAS CONSIDERABLE DIFFERENCE IN THE HORIZONTAL AND VERTICAL DISTRIBUTION OF SI. FACILITY: ZAPOROZH. MASHINGSTR. INST. IM. CHUBARYA, ZAPOROZHE, USSR.

UNCLASSIFIED

USSR

UDC 547.241

PUDOVIK, A. N., GAREYEV, R. D., and SHTIL'MAN, S. Ye., Kazan' State University imeni V. I. Ul'yanov-Lenin

"Enolization of the Ethyl Ester of  $\alpha$ -Dimethoxyphosphinylacetoacetic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1646-1647

Abstract: The adduct of the "aldol" type reaction of ethyl diazoacetate with dimethoxyacetophosphonate breaks down in refluxing dioxane, yielding nitrogen and the ethyl ester of  $\alpha$ -dimethoxyphosphinylacetoacetic acid. In this compound the ratio of the tautomeric forms was the following: cis-enol form: trans enol form: ketone form = 69.1:21.4:9.5.

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USSR

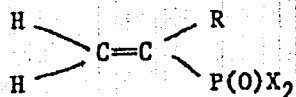
UDC 547.341

PUDOVIK, A. M., STABROVSKAYA, L. A., YEVSTAF'YEV, G. I., REMIZOV, A. B.,  
and GAREYEV, R. D., Kazan State University imeni V. I. Ul'yanova-Lenina

"Kinetics of the 1,3-Bipolar Cycloaddition of Diphenyldiazomethane to  
Unsaturated Organophosphorus Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 8, 1972, pp 1862-1863

Abstract: The title study was carried out for organophosphorus compounds  
having the general form



for 12 combinations of R, usually H, and X — usually alkyl, alkoxyl, aryl,  
or phenol groups. Values of the velocity constant, ranging from 0.61 to 20.35  
are compared with the P=O vibration, from 1190 to 1283  $\text{cm}^{-1}$  in a 0.2M benzene  
solution, and chemical shift of the  $\text{P}^{31}$  nucleus, from -10 to -33 m.d. in a  
50% acetone solution. The reactivity of the studied compounds were closely  
correlated with the indicators of the influence of substitutions on the  
electronic behavior of the P atom. For this reaction the energy of activa-  
tion  $E_A = 12.5 \pm 0.4$  kcal/mole and the entropy  $\Delta S^\ddagger = -35.2$ , in good agreement  
with the 1,3-bipolar cycloaddition mechanism.

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UDC 547.341

PUDOVIK, A. N., GAREYEV, R. D., STABROVSKAYA, L. A., YEVSTAF'YEV, G. I., and  
REMIZOV, A. B., Kazan' State University Imeni V. I. Ul'yanov-Lenin

"Reactivity of Unsaturated Organophosphorus Compounds in the Reaction of  
1,3-Dipolar Cycloaddition of Diaryldiazomethanes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 8, Aug 73, pp 1674-1682

Abstract: The kinetics of the 1,3-dipolar cycloaddition reaction of diaryl-  
diazomethanes with organophosphorus dipolarophiles at 60° in m-xylene was  
investigated. The reaction mechanism is based on a single stage polycentric  
process with a cyclic electron transfer. The established order of dipolaro-  
philic activity of the unsaturated organophosphorus compounds agrees well  
with current concepts of the effect of substituents at the phosphorus atom:  
additive manifestation of the inductive effect and the ability of the sub-  
stituents to conjugate with the main system.

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USSR

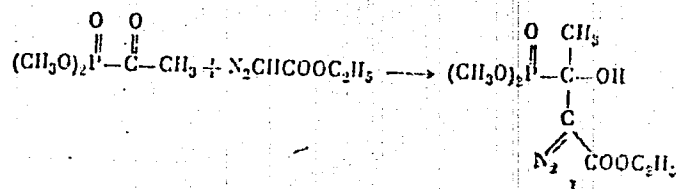
UDC: 547.26'118

PUDOVIK, A. N., REMIZOV, A. B., STABROVSKAYA, L. A., SUTIL'MAN, S. Ye.,  
LUSHCHITS, I. G., GAREYEV, R. D., Kazan' State University imeni V. I.  
Ul'yanov-Lenin

"Adduct of the 'Aldol' Type of Ethyl Diazoacetate With Dimethyl Acetophosphonate"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, p 1421

**Abstract:** The authors investigated the reaction of dimethyl acetophosphonate with ethyl diazoacetate at room temperature. It was found that an "aldol" addition product is formed without elimination of nitrogen.



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USSR

UDC: 547.26'118

REMIZOV, A. B., ~~GAREYEV, R. D.~~, PUDOVIK, A. N., Kazan' State University imeni V. I. Ul'yanov-Lenin

"Rotational Isomerism of Dialkyl Esters of Aceto- and Benzoylphosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1238-1240

Abstract: The authors studied the infrared spectra of dimethyl and diethyl phosphonate (I and II) and dimethyl benzoylphosphonate (III). The spectra were taken on the UR-20 spectrophotometer. All three compounds were studied in the liquid state, and compound (I) was studied in the gaseous state as well. The effect of temperature was investigated. An analysis of the experimental material showed dynamic equilibrium of two isomers in compounds (I) and (II) due to rotation about the P-C bond. The rotational isomerism is observed in the liquid state both with and without a solvent.

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USSR

UDC: 538.27+541.67+547.341+547.772

SAMITOV, Yu. Yu., ~~GABEYEV, R. D.~~, STABROVSKAYA, L. A., PUDOVNIK, A. N.,  
Kazan' State University imeni V. I. Ul'yanov-Lenin

"Stereochemistry of Organophosphorus Compounds. II. NMR Spectra, Conformations  
of 3- and 5-Phosphorylated  $\Delta^1$ - and  $\Delta^2$ -Pyrazolines and Angular Correlation  
 $^3J_{PCCH}$ "

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104) No 6, Jun 72, pp 1227-1235

Abstract: 3-Methyl-3-dialkoxyphosphinyl-5,5-dimethyl-  $\Delta^1$ - and 3-phenyl-5-methyl-5-dimethoxyphosphinyl-  $\Delta^2$ -pyrazolines were synthesized. The paramagnetic resonance spectra of 3- and 5-phosphorylated  $\Delta^1$ - and  $\Delta^2$ -pyrazolines were studied, and their preferred conformations were determined. The angular correlation was empirically established for the vicinal constant of spin-spin interaction type  $^3J_{PCCH} = f(\phi)$  for the case where the carbon atoms in the P-C-C-H fragment have  $sp^3$  hybridization, and where there is no steric hindrance to rotation of the dimethoxyphosphinyl group about the P-C bond. It was established by ultraviolet and infrared spectroscopy that the tetrahedral phosphorus atom falls behind the phenyl group with respect to ability to enter into conjugation.

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USSR

UDC 547.512+547.341+547.722.2

PUDOVIK, A. N., GAREYEV, R. D., STABROVSKAYA, L. A., YEVSTAF'YEV, G. I.,  
REMIZOV, A. B.

"Cyclic Addition of Diazoalkanes to Isopropenylphosphonates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 80-87

Abstract: A study was made of the reactions of diazomethane with esters of isopropenylphosphonic acid. By the addition of diazomethane to isopropenylphosphonates, the corresponding phosphorylated  $\Delta^1$ -pyrazolines were obtained which quickly isomerized into  $\Delta^2$ -pyrazolines in the presence of bases. By ultraviolet spectroscopy it was established that the tetrahedral phosphorus atom interacts by its d-orbitals with the  $\pi$ -orbital of the C=N radical. With respect to capacity to enter into conjugation it is inferior to the ester carbonyl radical. The concentration and temperature infrared spectroscopy showed that the 3 and 5-phosphorylated  $\Delta^2$ -pyrazolines are associated at the expense of the intermolecular hydrogen bonds.

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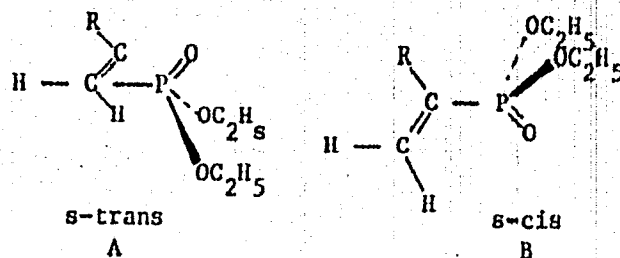
UDC 547.341

ISHMAYEVA, E. A., GAREYEV, R. D., YASTREBOVA, G. YE. PUDOVIK, A. N.

"Dipole Moments of Organophosphorus Compounds. IX. Vinylphosphonate and vinylphosphinoxides"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 73-76

Abstract: As a continuation of studies of organophosphorus compounds [E. A. Ishmayeva, et al., *Izv. AN SSSR, ser. khim.*, 2695, 1970] by the method of dipole moments to establish their spatial structure and electron density distribution, the dipole moments of the diethyl esters of  $\alpha$ -methyl,  $\alpha$ -cyano and  $\alpha$ -bromovinylphosphonic acids were determined. The possible conformers of these compounds are represented as follows:



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ISHMAYEVA, E. A., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 73-76

The ratio of the s-cis and s-trans-conformers in the  $\alpha$ -substituted vinylphosphonates and their relative stability were determined by the electrostatic interaction of the dipoles. The presence of the rotational isomerism with respect to the  $C_{sp^2}$ -P bond was established in the diethyl ester and the acid dichloride of  $\beta$ -butoxyvinylphosphonic acid. The effective dipole moments of the  $C_{sp^2}$ -bonds in the oxides of vinylphosphines indicate conjugation of the vinyl and  $P(O)R_2$  radicals.

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USSR

UDC 547.512+547.341+547.772.2

PUDOVIK, A. N., GAREEV, R. D., RAYEVSKAYA, O.E., Kazan State University imeni V. I. Ul'yanov, Lenin

"Synthesis and Properties of 3-Dialkoxyphosphono-5,5-diphenyl- $\Delta^1$ - and  $\Delta^2$ -pyrazolines"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1189-1195

Abstract: The reactions of diphenyldiazomethane (I) with diethyl and dimethyl vinylphosphonates were studied. Whereas in the reaction with diethyl vinylphosphonate the  $\Delta^2$ -pyrazoline derivative, namely 3-diethoxy-phosphono-5,5-diphenyl- $\Delta^2$ -pyrazoline, is obtained, the  $\Delta^1$ -analog is obtained when dimethyl vinylphosphonate reacts with I. The characteristic P-O-CH<sub>3</sub> IR bands at 1030, 1060, and 1190 cm<sup>-1</sup> are observed together with the characteristic bands of the P=O group, the C-H bonds of the benzene rings, and the N=N bond. The  $\Delta^1$ -pyrazolines are easily isomerized into the thermodynamically more stable  $\Delta^2$ -pyrazolines. Strong bases and acids catalyze this transformation. Thus, the reaction of dimethyl vinylphosphonate with I in acetonitrile at room temperature yields within 1 hr the  $\Delta^2$ -pyrazoline derivative in 70.1% yield. It could be shown in a special experiment that the  $\Delta^1$ -pyrazoline is completely transformed into the  $\Delta^2$ -pyrazoline within 10 hours at room temperature.

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PUDOVIK, A. N., et al, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1189-1195

if triethylamine is present. The  $\Delta^1$ -pyrazoline, when heated for half-an-hour at  $75^\circ$ , was completely decomposed to yield quantitatively  $N_2$  and 1-dimethoxyphosphono-2,2-diphenylcyclopropane (II) (92.5%), whereas the  $\Delta^2$ -pyrazoline derivative remains unchanged under these conditions and is transformed into II only after heating to  $160-170^\circ$ . This indicates that the reaction of diphenyldiazomethane with vinylphosphonates yields first  $\Delta^1$ -pyrazolines which in a second stage can be isomerized to the corresponding  $\Delta^2$ -pyrazolines or which can be decomposed to  $N_2$  and the corresponding cyclopropanes. The presence of the cyclopropane ring could be shown by NMR spectra. IR spectral studies showed that the  $\Delta^2$ -pyrazolines form associations as a result of intermolecular hydrogen bonds.

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UIC 547.341+547.772.2

PUDOVIK, A. N., GAREYEV, R. D., and AGANOV, A. V., Kazan State University

"1,3-Bipolar Addition of Diazomethane to Esters of Unsaturated Phosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1017-1022

Abstract: 1,3-Bipolar addition of diazomethane to esters of vinyl-, propenyl- and allylphosphonic acids yields the corresponding  $\Delta^2$ -pyrazolines. The prototropic isomerism which converts  $\Delta^1$ -pyrazolines to the  $\Delta^2$  form is spontaneous in this reaction sequence. The condensed form of the  $\Delta^2$  isomer forms associates at the intermolecular hydrogen bonds. All structures were confirmed by IR and NMR spectroscopy; this data and physical data on the specific compounds prepared in this work are presented.

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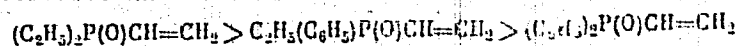
UDC 547.341+547.772.2

PUDOVIK, A. N., GAREYEV, R. D., AGANOV, A. V., RAYEVSKAYA, O. E., and STABROVSKAYA, L. A., Kazan State University

"The Reaction of Diphenyldiazomethane with Tertiary Vinyl- and Allylphosphine Oxides"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1008-1016

Abstract: The thermal reaction (75°-80°) of diphenyldiazomethane with tertiary phenylphosphine oxides proceeds with the formation of the corresponding  $\Delta'$ -pyrazoline intermediates. The further reaction sequence, either reduces the pyrazolines to the related cyclopropane derivatives liberating nitrogen, or forms the isomeric  $\Delta^2$ -pyrazolines. The comparative reactivity of oxides with diphenyldiazomethane decreases in the series:



All structures were confirmed by IR, UV and NMR spectroscopy.

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USSR

UDC 547.341

PUDOVIK, A. N., GAREYEV, R. D., AGANOV, A. V., and STABROVSKAYA, L. A.,  
Kazan State University imeni V. I. Ul'yanov-Lenin

"The Reaction of Dimethoxyisopropenyl Phosphonate with 2-Diazopropane"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, p 1173

Abstract: 3-Methyl-3-dimethoxyphosphinyl-5,5-dimethyl- $\Delta'$ -pyrazoline (I) is formed at room temperature by the reaction of the dimethyl ester of isopropenyl-phosphonic acid with 2-diazopropane, with a yield of 73.4%. No isomerization of  $\Delta'$ -pyrazoline takes place. Compound I is easily converted to 3-diphenoxy-phosphinyl-3-methyl-5,5-diphenyl- $\Delta'$ -pyrazoline, although, the geminal phenyl radicals are unstable at temperatures higher than 50°.

1/1

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ALPHA,OXOPHOSPHGNATES IN REACTIONS WITH DIPHENYLDIAZOMETHANE -U-  
AUTHOR--(03)-PUDOVIK, A.N., GAREYEV, R.D., STABROVSKAYA, L.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 698  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--HETEROCYCLIC OXYGEN COMPOUND, BENZENE DERIVATIVE, POLYNUCLEAR  
HYDROCARBON, ORGANIC PHOSPHORUS COMPOUND, AZO COMPOUND, ORGANIC  
SYNTHESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/0895 STEP NO--UR/0079/70/040/003/0698/0698  
CIRC ACCESSION NO--AP0124558

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124558

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION OF (MED) SUB2 P(O)AC AND  
PH SUB2 CH SUB2 OCCURRED RAPIDLY AT 80DEGREES TO GIVE 63PERCENT I AND N  
SUB2; I, M. 87-8DEGREES. SIMILAR REACTION WITH (MED) SUB2 P(O)BZ GAVE  
83PERCENT II, M. 129-30DEGREES.

UNCLASSIFIED

USSR

UDC 547.512 + 547.341. + 547.772.2

PUDOVIK, A. N., and GAREYEV, R. D., Kazan' State University imeni V. I. Ul'yanov-Lenin, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"Reactions of Diphenyldiazomethane With Isopropenylphosphonic Acid Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1025-1030

Abstract: For purposes of studying thermal reactions of diphenyldiazomethane, as well as reactions of diphenylmethylen with isopropenylphosphonic acid derivatives, the authors studied the behavior of diphenyldiazomethane towards dimethoxy-, diethoxy- and diphenoxyisopropenyl phosphonates under thermal reactions staged at 75°. Phosphorus-containing cyclopropane derivatives were obtained. Thermal reactions with isopropenyl phosphonates proceed according to a "pyrazoline" mechanism rather than a "diazonium" mechanism. Isopropenylphosphonic acid dichloride reacts with diphenyldiazomethane to give 1-dichlorophosphono-1-methyl-2,2-diphenylcyclopropane. A study of cata-

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USSR

PUDOVIK, A. N., and GAREYEV, R. D., Zhurnal Obshchey Khimii, Vol 40,  
No 5, May 70, pp 1025-1030

lytic reactions of isopropenyl phosphonates with diphenyldiazomethane at 75° in the presence of anhydrous copper sulfate showed that in the case of diethoxyisopropenyl phosphonate only a small quantity of cyclopropane derivative is formed. The reaction is accompanied by the formation of benzophenonazine and benzophenone. The diphenylmeth-ylene resulting from the catalytic decomposition of diphenyldiazometh-ane possesses nucleophilic properties.

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USSR

UDC 547.341

PUDOVIK, A. N., GAREYEV, R. P., STABROVSKAYA, L. A., and AGANOV, A. V.,  
Kazan' State University Imeni V. I. Ul'yanov-Lenin

"1,3-Dipolar Cycloaddition of 9-Diazo fluorene to Unsaturated Organic Phosphorus Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 43,(105), No 6, Jun 73, pp 1236-1240

Abstract: The reactions of 9-diazo fluorene with unsaturated organic phosphorus compounds at room temperature pass through the formation of intermediate products --  $\Delta^1$ -pyrazolenes, which, depending on experimental conditions, break down to nitrogen and cyclopropane derivatives, or isomerize to  $\Delta^2$ -pyrazolenes. In comparison to diphenyldiazomethane, 9-diazo fluorene is less reactive in regard to its enophilic activity in the reactions of 1,3-dipolar cycloaddition to organic phosphorus dipolarophiles. When 9-diazo fluorene was reacted with dimethoxyvinylphosphonate at about 80°C, the product was 1-dimethoxyvinyl-2-biphenylenecyclopropane.

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1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PENETRATION OF DEOXYRIBONUCLEASES INTO INTACT CELLS OF EHRlich  
CARCINOMA AND THEIR INFLUENCE ON NUCLEIC ACID SYNTHESIS -U-  
AUTHOR-(03)-NUZHINA, A.M., VINTER, V.G., GAREYSHINA, A.Z.  
COUNTRY OF INFO--USSR  
SOURCE--VOP. CANGL, 1970, 16(4), 99-103  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CARCINOMA, RNA, DNA, PANCREAS, BACTERIA, RIBONUCLEASE,  
BIOSYNTHESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAmE--3002/0486 STEP NO--UR/0506/70/016/004/0099/0103  
CIRC ACCESSION NO--AP0128055  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0128055

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PANCREATIC OR SERRATIA MARCESCENS DNASE PENETRATED INTACT EHRlich CARCINOMA CELLS, APPARENTLY IN 2 STAGES INVOLVING ADSORPTION ON THE CELL MEMBRANE SURFACE AND DIRECT PERMEATION INTO THE CYTOPLASM. IN SMALL CONCNS. (10 MUG-ML) EXOGENOUS DNASE STIMULATED AND AT LARGE CONCNS. (30-50 MUG-ML) SHARPLY INHIBITED THE SYNTHESIS OF DNA AND RNA. FACILITY: STATE KAZAN UNIV., KAZAN, USSR.

UNCLASSIFIED

USSR

UDC: 620.178.3:53.082.5

GARF, M. E., KUBYAK, R. F., Kiev

"Use of Fiber Optics for Observation of the Development of Fatigue Cracks"

Kiev, Problemy Prochnosti, No 3, Mar 73, pp 105-107.

Abstract: Methodology and results are presented from a study of the resistance of fiber light guides to variable loads arising during vibration. The possibility is demonstrated of using fiber light guides to study the regularities of fatigue rupture developing in areas not accessible for direct observation or in metal in a nontransparent medium. The investigation of the usability of glass fiber cords vibrating at 25-100 Hz at moderate accelerations showed that they are sufficiently reliable to study the regularities of the process of fatigue rupture. The method developed for observation of fatigue rupture does not require direct illumination of the surface observed or stopping of the test machine.

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USSR

UDC 577.3

TOROPTSEV, I. V., ~~GARCANEYEV, C. B.~~, GORSHENINA, T. I., and TEPLYAKOVA, N. L.

"Pathological Anatomical Description of Changes Arising in Experimental Animals Under the Influence of Magnetic Fields"

Vliyaniye Magnitnykh Poley na Biologicheskiye Ob"yekty, pp 98-107

Abstract: A comparison of all morphological changes in the organs and tissues of laboratory animals studied revealed that the male sex glands have the greatest sensitivity to magnetic fields. Under the influence of this physical factor, there was an impairment of mitosis as a result of which gigantic multinuclear cells appeared in a number of organs (testicles, liver, kidneys, adrenal glands, epithelium of the crystalline lens). The set of morphological changes caused by a magnetic field in the whole organism makes it possible to speak of the specifics of the pathological anatomical picture. A study of morphological changes in dynamic terms revealed a manifest tendency to normalize impaired structures in organs and tissues after the effect of the magnetic fields stops. The biological effectiveness of pulsed and intermittent magnetic fields was higher than constant magnetic fields. The pathological changes in a number of organs and systems which arise under conditions of the magnetic fields tested are not catastrophic.

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- 96 -

1/2 032 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--EXPERIMENTAL EVALUATION OF LAGRANGIAN TURBULENCE TIME SCALE -U-  
AUTHOR--(03)-BYZOVA, N.L., GARGER, YE.K., IVANOV, V.N. **G**  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ATMOSFERY I ODEANA,  
VOL VI, NO 6, 1970, PP 547-555  
DATE PUBLISHED-----70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES  
TOPIC TAGS--EULER EQUATION, LAGRANGE EQUATION, ATMOSPHERIC TURBULENCE,  
TURBULENT MIXING, ATMOSPHERIC STRATIFICATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0547 STEP NO--UR/0362/70/006/006/0547/0555  
CIRC ACCESSION NO--AP0132733

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132733

ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. EXPERIMENTAL DATA ON THE CHARACTERISTICS OF TURBULENCE IN LAGRANGIAN VARIABLES ARE PARTICULARLY IMPORTANT FOR EVALUATING TURBULENT MIXING AND DIFFUSION IN FLOWS WHERE THE GRADIENTS OF MEAN HYDRODYNAMIC FIELDS ARE ABSENT OR ARE SMALL. IN PARTICULAR, SUCH A PROBLEM ARISES IN THE BOUNDARY LAYER OF THE ATMOSPHERE IN EVALUATING DIFFUSION IN THE HORIZONTAL PLANE. IN THIS PAPER LAGRANGIAN AND EULERIAN TURBULENCE CHARACTERISTICS AT AN ALTITUDE OF ABOUT 100 M ARE EVALUATED FROM SIMULTANEOUS LAGRANGIAN AND EULERIAN MEASUREMENTS. COMPARISON OF THE VALUES OF DISSIPATION OF TURBULENT ENERGY OBTAINED FROM DATA IN THE INERTIAL RANGE USING THESE TWO INDEPENDENT METHODS REVEALED A GOOD AGREEMENT. THE LAGRANGIAN TIME SCALE WAS EVALUATED BY DIFFERENT METHODS AND THE RESULTS WERE QUITE CLOSE. THE AUTHORS DERIVE THE EXPERIMENTAL DEPENDENCE OF THE LAGRANGIAN TIME SCALE ON STRATIFICATION. FACILITY: INSTITUTE OF EXPERIMENTAL METEOROLOGY.

UNCLASSIFIED

USSR

UDC 612.821.6

GAREYEV, Ye. M., Chair of Human and Animal Physiology, Baskir State University, Ufa

"A Study of Time Estimation in Different Kinds of Human Activity"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, Vol 23, Vyp 5, Sep/Oct 73, pp 1,077-1,079

Abstract: Time estimation was compared in ten subjects during verbal, mathematical and physical work and during unoccupied intervals. It was found that the estimation was consistently lower during mental work, while that during physical work often approached the unoccupied estimation. The subjects reported counting during unoccupied time and physical work, and some mental work, but often used an estimation of the amount of time necessary for a unit of work or guesswork during complicated tasks. Time evaluation is said to be the formation of bonds between a program of activity of determined tempo and evaluation of the length of time passed. These bonds are considered to be disturbed by the inhibiting influences of negative induction during intellectual activity. The degree of inhibition is considered to depend on the closeness of the two forms of activity, as in counting and calculating, and the degree of concentration.

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Magnetohydrodynamics

USSR

UDC: 533.9...15

GARIB, M., KRAVCHUK, T. P.

"Relaxation Method of Plasma Diagnosis"

Tr. Un-ta druzhby narodov im. Patrisa Lumumby (Works of Patrice Lumumba Friendship University), 1972, 62, pp 48-55 (from RZh-Fizika, No 6, Jun 73, abstract No 6G135 by I. Moskalyov)

Translation: A relaxation method of measuring the concentration of charged particles is investigated. The principle of the method consists in measuring the characteristic damping time  $\tau$  of the transient current in the circuit of a cylindrical capacitor filled with a magnetically active plasma. The shape of the current pulse when a square voltage pulse is sent to the input of the measurement circuit is determined by the capacitance of the "plasma capacitor", which depends on the permittivity of the plasma, and hence on the concentration  $n$ . Expressions are derived which relate the quantities  $\tau$ ,  $n$ , and the parameters of the measurement circuit for various special cases (effective frequencies of collisions of electrons and ions much greater than the corresponding cyclotron frequencies, much less than them, and approximately equal to them). The

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GARIB, M., KRAVCHUK, T. P., Tr. Un-ta druzhby narodov im. Patrisa Lumumby, 1972, 62, pp 48-55

paper gives the results of determination of the density of a molecular hydrogen plasma in the pressure range of  $p = 4-8 \cdot 10^{-2}$  mm Hg in the absence of a magnetic field. The control dependence  $n$  on pressure obtained by probes confirms the data of the relaxation method.

2/2

Steels

USSR

UDC 539.67

TAVADZE, F. N., ZOIDZE, N. A., BADZOSHVILI, V. I., METREVELI, V. SH., and  
GARIBASHVILI, V. I.

"The Effect of Boron on the Internal Friction and Mechanical Properties of  
CONGVR Steel"

Sb. "Vnutrenneye treniye v metallicheskih materialakh" (Internal Friction  
in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 132-134

Abstract: It is shown that the addition of boron to CONGVR steel leads to an  
increase in strength, and reinforces the effect of heat treatment on "heredity."  
In samples containing boron, a preliminary deformation at room temperature  
increases the strength and yield stress after the  $\alpha$ - $\gamma$ - $\alpha$  transformations.

It is assumed that an increase in mechanical properties is related to the  
effect of boron on the formation of steel substructure. Certain recommenda-  
tions are given on the practical use of boron for strengthening the effect of  
heat treatment on the "heredity" of alloyed steels. 2 figures.

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USSR

6 UDC: 541.69 + 542.92 + 547.416

GARIBDZHANYAN, B. T., STYEPANYAN, G. M., IRADYAN, M. A., and AROYAN, A. A.,  
Institute of Fine Organic Chemistry, Yerevan, Academy of Sciences Armenian  
SSR

"Synthesis and Biological Studies of Some Novel Substituted Benzyl-bis-  
( $\beta$ -chloroethyl)-amines"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 23, No 2, 1970, pp 166-172

Abstract: The authors synthesized a series of 2-alkoxy-5-chlorobenzyl-chlorides by chloromethylation of p-alkoxychlorobenzene with paraformaldehyde and HCl in presence of anhydrous zinc chloride, and reacted it with diethanol amine in dioxane to obtain 2-alkoxy-5-chlorobenzyl-bis-( $\beta$ -hydroxyethyl)-amines, which were eventually converted to hydrochlorides. Biological properties of these compounds and of 3-chloro-4-alkoxybenzyl-bis-( $\beta$ -chloroethyl)-amines obtained earlier were studied on rats and mice, and it was determined that all of them were more toxic than corresponding bromo-derivatives. Some of them also exhibited somewhat higher antitumor activity.

1/1

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SYNTHESIS AND BIOLOGICAL STUDY OF SOME NEW SUBSTITUTED BENZYLBI  
(BETA CHLOROETHYL) AMINES -U-  
AUTHOR-(04)-GARIBDZHANYAN, B.T., STEPANYAN, G.M., IRADYAN, M.A., AROYAN,  
A.A.  
COUNTRY OF INFO--USSR  
SOURCE--ARM. KHIM. ZH. 1970, 23(2), 166-72  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ANTITUMOR DRUG EFFECT, CHEMICAL SYNTHESIS, CHLORINATED ORGANIC  
COMPOUND, BENZENE DERIVATIVE, ALKOXIDE, AMINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0789 STEP NO--UR/0426/70/023/002/0166/0172  
CIRC ACCESSION NO--AP0119696  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119696

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.

(2,ALKOXY,5,CHLOROBENZYL) BIS(BETA,CHLOROETHYL) AMINES (I) AND THEIR  
4,ALKOXY,3,CHLOROBENZYL ISOMERS (II) WERE PREPD. AS ANTITUMOR AGENTS AND  
COMPARED WITH THE BROMO ANALOGS. THE CL DERIVS, WERE MORE TOXIC THAN  
THE BR ANALOGS. LARGER ALKOXY GROUPS IN I WERE LESS TOXIC, BUT IN II  
THE EFFECT OF LARGER ALKOXY GROUPS WAS THE REVERSE. SOME CHLORO DERIVS.  
WERE BIOL. MORE ACTIVE THAN THE BROMO COMPDs. 2,ALKOXY,5,CHLOROBENZYL  
CHLORIDES (III) WERE PREPD. BY CHLOROMETHYLATION OF  
N,ALKOXYCHLOROBENZENES WITH PARAFORMALDEHYDE AND HCL OVER ZNCL SUB2.  
(III) (0.1 MOLE), 0.2 MOLE HN(CH SUB2 CH SUB2 OH) SUB2, AND 40-50 ML  
DIOXANE GAVE 2,5,ROCLC SUB6 H SUB3 CH SUB2 N(CH SUB2 CH SUB2 OH) SUB2  
(IV). IV (0.1 MOLE) IN 50 ML C SUB6 H SUB6 WITH 0.4 MOLE SOCL SUB2 IN C  
SUB6 H SUB6 GAVE I.HCL. FACILITY: INST. TONKOI ORG. KHIM.,  
EREVAN, USSR.

UNCLASSIFIED

USSR

UDC 542.91+547.466+547.964.4

AGADZHANYAN, Ts. Ye., AMBOYAN, K. L., GARIBDZHANYAN, B. T., and CHACHOYAN, A. A., Institute of Fine Organic Chemistry imeni A. L. Mndzhoyan, Acad. Sc. Armenian SSR, (Yerevan)

"Biologically Active Polymers. I. Synthesis of Polypeptides Containing Cytotoxic Groups"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 11, 1972, pp 956-962

Abstract: Polypeptides of glycine, sarcosine, DL-norleucine, DL-leucine, L-phenylalanine, L- and D-valine were synthesized, connected to the ethylenimine, N,N-bis-(2-chloroethyl)-p-phenylenediamine or to the ethyl ester of sarcosine by an amide linkage. Derivatives of polypeptides were obtained in anhydrous dioxane by polymerization of N-carboxy anhydrides of the corresponding aminoacids in presence of the above mentioned amines. The structure of the polymers has been confirmed by means of infrared and ultraviolet spectra. It was shown that some of the products exhibited antitumor activity on Walker carcinosarcoma and Ehrlich ascitis tumor.

1/1

- 65 -

Oncology

USSR

UDC 577.1:615.7/9

MNDZHOYAN, A. L., ~~GARIBDZHANYAN, B. T.~~, ZAKHARYAN, R. A., and DEMIRCHYAN, D. K., Institute of Fine Organic Chemistry, Academy of Sciences Armenian SSR

"Changes in the Nucleotide Composition of RNA and DNA in Tissues of Tumor-Bearing Rats Upon Chemotherapy With Thio-TEPA"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 24, No 3, Mar 71, pp 3-10

Abstract: The effects of Thio-TEPA, a frequently used antitumor drug, in changing the nucleotide composition of RNA and DNA in rapidly proliferating tissues (the spleen and testes) of normal rats and in these tissues and tumor tissues in rats with S-45 sarcoma were studied. Thio-TEPA on intraperitoneal administration ten times in the maximum tolerated dose reduced the size of the spleen and testes in both normal rats and rats with a tumor. It also reduced the size of the tumor in rats with sarcoma as compared with controls not exposed to the effect of the drug. The nucleotide composition of both RNA and DNA in the spleen and testes was altered by the drug, principally because of alkylation of guanine at N<sub>7</sub>, whereas there were no significant changes in the nucleotide composition of RNA in tumor tissue. The action of Thio-TEPA on rapidly proliferating tissue

1/2

USSR

MNDZHOYAN, A. L., et al., Biologicheskii Zhurnal Armenii, Vol 24, No 3,  
Mar 71, pp 3-10

of the two organs studied consisted of reversion of growth, while its effect  
on tumor tissue was one of suppression of further growth.

2/2

62



USSR

UDC 621.382.004:539.293

ABDULLAYEV, G. B., Corresponding Member of the USSR Academy of Sciences, GARIBOV, M. A., GADZHIYEV, N. D., and TALIBI, M. A.

"Selenium Moisture Element -- a New Form of Semiconductor Converter"

Baku, Doklady Akademii Nauk Azerbaydzhanskoy SSR, No 2, 1973, pp 17-21

Abstract: This theoretical paper is concerned with selenium diodes with p-n heterojunctions which are capable of producing an electrical voltage in response to a moisture or humidity stimulus. The voltage-moisture characteristic of such a device is similar to that of photosensitive diodes responding to light. The purpose of this paper is to obtain a fuller notion of the mechanism producing this moisture emf. Experiments performed on such diodes showed that the electrical effects of the moisture are the results of processes in the electron-hole junction region. It is found that, under the action of humidity, there is an imbalance of electron-hole pairs on the n-layer side. All the holes originating in the n-layer and arriving at the junction under the effect of the contact field cross over to the p region; the electrons are repelled by the contact field and remain in the n region.

1/2

USSR

UDC 621.382.004:539.293

ABDULLAYEV, G. B., et al, Doklady Akademii Nauk Azerbaydzhanskoy SSR, No 2, 1973, pp 17-21

Expressions are found for the current and voltage as functions of the humidity, and the corresponding characteristics are plotted.

2/2

- 34 -

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--LUBRICANT COOLANT FOR COLD WORKING OF METALS --U-

AUTHOR--(05)--SGKULOVSKAYA, V.V., RUDNEV, A.V., GARIBOV, V.R., LEYN, YU.I.,  
BARINOV, V.YE.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,581

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRATSY, TOVARNYE ZNAKI, 1970,  
DATE PUBLISHED--03MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--METALWORKING LUBRICANT, CHEMICAL PATENT, HEAT TRANSFER FLUID,  
GLYCEROL, ETHYLENE GLYCOL

CENTRCL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3002/0093

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0127720

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0127720

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE LIQ. CONTAINS CALCINED SODA 0.3-0.4, NANO SUB2 0.12-0.14, NA TARTRATE 0.14-0.16, NAOH 0.03-0.05, GLYCEROL OR ETHYLENE GLYCOL 0.002-0.005, AND H SUB2 O TO MAKE 100PERCENT. FACILITY: VSESOYUZNYY NAUCHNO, ISSLEDOVATEL'SKIY INSTRUMENTAL'NYY INSTITUT.

UNCLASSIFIED

USSR

UDC 612.886

GARIBYAN, A. A., Neurobionics Laboratory, Academy of Sciences Armenian SSR

"The Role of the Vestibular Analysor in the Polyanalysor Mechanism of Statokinetic Coordination"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 23, No 6, Jun 70, pp 63-67

Abstract: Of 80 dogs and 25 cats used in this experiment on statokinetic coordination, several of the animals were deprived of two legs to better study their compensatory adaptations. Two-legged animals subjected to bilateral disturbance of the labyrinths lose the ability to walk on 2 legs, which they gradually regain after several weeks: when also deprived of sight the ability to walk is regained more slowly. The loss of sight alone does not impair statokinetic coordination. Disturbance of the motor tracts in the pyramid has no effect on statokinetics, although motion is severely disturbed. Extirpation of the motor area at the sylvian fissure shows that this part is functionally connected with the vestibular analysor. Experimental data show that vestibular is the most important analysor in the mechanism of statokinetic coordination.

1/1

USSR

UDC: 669.71.472

REVAZYAN, A. A., GARIBYAN, A. O.

"Study of the Inertial Nature of the Formation of emf"

Tr. Arm. N.-I. i Proyeckt. In-ta Tsvet. Metallurgii [Works of Armenian Scientific Research and Planning Institute for Nonferrous Metallurgy], 1972, No 1(10), pp 197-201 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G173, by G. Svodtseva).

Translation: The formation of the emf of Al electrolyzers is inertial in nature. This property results from the inertial nature of the potential of the carbon anode. Hindering or facilitating the process of transfer of potential-determining ions may influence the potential of the carbon anode and, consequently, the formation of the emf. The emf is greater, the greater the difference in concentration of potential-determining ions at the electrode and in the volume of the electrolyte.

1/1

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USSR

UDC: None

ALIKHAN'YAN, A. I., BELYAKOV, E. S., GARIBYAN, G. M., LORIKYAN, M. P.,  
MARKARYAN, K. Zh., and SHIKHLYAROV, K. K.

"Separation of Ultra-High-Energy Particles by the Radiation Transition Method"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16,  
No 6, 20 September 1972, pp 315-318

Abstract: Detectors of transition radiation in the x-ray frequency range are widely used for identifying high-energy particles in cosmic rays and in large accelerators. This letter gives the results of experiments conducted on transitional radiation occurring in foam plastic of 0.04 g/cm<sup>3</sup> density with electron energies of 1-4.5 GeV, where it was shown that the use of the streamer chamber method with a foam plastic radiator permitted the separation of particles in the energy range of  $\gamma = E/mc^2 > 10^3$  with high reliability. The equipment used for the measurements was the same as that described in an earlier article (A. I. Alikhan'yan, et al, Izv. AN Arm. SSR, Fizika, 5, 1970, p 267), modified to permit observation of the primary electron track, thus easing the procedure. The question of the possibility of separating protons and pi-mesons using this method is also investigated. The authors thank A. Ts. Amatuni for his useful comments.

1/1

USSR

AVAKYAN, K. M., ALIKHANYAN, A. I., GARIBYAN, G. M., LORIKYAN, M. P., SHIKHLYAROV, K. K.

"Detection of Transient X-Radiation by Means of a Streamer Chamber"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR, Fizika, Vol 5, No 4, 1970, pp 267-274

Abstract: A new method is proposed for detecting x-ray transient radiation by means of a streamer chamber with an admixture of Xe. Use of the streamer chamber provides for separate observation of the radiation as well as of the particle, and the presence of Xe provides great efficiency in the detection of photons. It is shown that the average number of transient quanta increases linearly in the electron-energy interval from 1.2 to 2.46 Gev. With the use of foam plastic instead of a layered medium, the efficiency of electron detection with respect to transient radiation equalled 86%.

1/1



USSR

GARIFULLINA, R. L., ZARIPOV, M. M., STEPANOV, V. G., TOLPAROV, Yu. N., Kazan'  
State University imeni V. I. Ul'yanov-Lenin

"Exchange-Coupled  $Mn^{2+}$  Ion Pairs in NaCl"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 12, Dec 72, pp 3513-3516

Abstract: The electron paramagnetic resonance method is used to study exchange-coupled pairs of short-range, neighboring, bivalent manganese cations in sodium chloride crystals grown with sulfur dopants. It is shown that this pair is ferromagnetic. The constants of the spin hamiltonian are determined at room temperature for the multiplet with  $S=5$ :  $g=2.004 \pm 0.0005$ ,  $|D| = 0.0259 \pm 0.0001$  T,  $|E| = 0.0029 \pm 5 \cdot 10^{-5}$  T, and  $|\Delta/2| = 0.0042 \pm 0.0002$  T. The variation of line intensity with temperature gives a constant of isotropic exchange interaction  $J = -(63 \pm 17) \text{ cm}^{-1}$ . A model is proposed for compensation of excess charges of the  $Mn^{2+}$  ions.

1/1

- 40 -

USSR

UDC: None

GARIFULLINA, R. L. and ZARIPOV, M. M.

"Spin Hamiltonian of the Crystalline Field for Exchange-Coupled,  
Iron-Group Ion Pairs"

Leningrad, Fizika Tverdogo Tela, No 6, 1973, pp 1909-1910

Abstract: Cases are known in which fourth-order terms for the crystalline field must be taken into account to identify electron paramagnetic resonance spectra for ion pairs of the iron group. This brief communication obtains expressions corresponding to such terms of the crystalline field for the spin Hamiltonian of a pair. It is noted that the terms obtained are valid only when  $2S \geq 4$ , where S is the spin Hamiltonian. The authors thank M. V. Yeremin for his advice.

1/1

1/2 014 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--EPR STUDY OF AN EXCHANGE COUPLED PAIR OF FE PRIME3 POSITIVE IONS IN  
CORUNDUM -U-  
AUTHOR--(03)-GARIFULLINA, R.L., ZARIPOV, M.M., STEPANOV, V.G.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERD. TELA 1970, 12(1), 55-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--EPR, IRON, ANTIFERROMAGNETIC MATERIAL, SAPPHIER, CORUNDUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1984/0217 STEP NO--UR/0181/70/012/001/0055/0058  
CIRC ACCESSION NO--AP0055013  
UNCLASSIFIED

2/2 '014

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055013

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TEMP. AND ANGULAR DEPENDENCIES WERE STUDIED OF THE EPR SPECTRUM OF EXCHANGE COUPLED PAIRS OF FE PRIME3 POSITIVE IONS IN NATURAL SAPPHIRE (1PERCENT FE). FOUR LINES WERE SEPD. AT H PERPENDICULAR TO C SUB3 AND 2 LINES AT H PARALLEL TO C SUB3 WHICH ARE RELATED TO THE LEVEL WITH S EQUALS 3 OF THE ANTIFERROMAGNETIC PAIR OF THE CLOSEST NEIGHBORS. FOR THAT PAIR, CALCN. WAS CARRIED OUT OF THE ENERGY LEVELS FOR S EQUALS 1, 2, AND 3. THE CONST. OF DIPOLE DIPOLE INTERACTION WAS CHOSEN AS 974 OE, WHICH IS CLOSE TO THE CONST. CALCD. FROM THE INTERIONIC DISTANCE AND EQUAL TO 912.9 OE. FROM THE TEMP. DEPENDENCE OF THE INTENSITY OF LINES THE CONST. WAS CALCD. OF THE ISOTROPIC EXCHANGE INTERACTION J EQUALS 250 PLUS OR MINUS 50 CM PRIME NEGATIVE1. BY USING AN 8 MM SPECTROMETER AT H PARALLEL TO C SUB3, FROM THE TEMP. DEPENDENCE, A LINE WAS SEPD. RELATED TO THE LEVEL WITH S EQUALS 1 FOR THE SAME PAIR. THE POSITION OF THE LINE COINCIDES WITH THE CALCD. POSITION.

UNCLASSIFIED

USSR

STEPANOV, V. G.; GARIFULLINA, R. L.; ZARIPOV, M. M. (Kazan State University)

"Study of Exchange-Coupled Pair of  $\text{Fe}^{3+}$  Ions in Corundum by EPR Method"

Leningrad, Solid State Physics; January, 1970; pp 55-8

Δ Δ Δ

ABSTRACT: By means of a three-centimeter spectroscope the authors studied the variation of the EPR spectrum of exchange-coupled pairs of  $\text{Fe}^{3+}$  ions in a natural sapphire (concentration of iron ions on the order of  $1\%$ ) with temperature and angle. Four lines with  $\text{H} \perp \text{C}_3$  and two lines with  $\text{H} \parallel \text{C}_3$ , related to the level with  $S = 3$  of the antiferromagnetic pair of the nearest neighbors, were isolated. Energy levels for  $S = 1, 2$ , and  $3$  were determined for this pair. In this case a dipole-dipole interaction constant equal to  $974$  oersteds, which is close to that calculated according to the inter-ion distance and equal to  $912.9$  oersteds, was selected. The constant of isotropic exchange interaction  $J = 250 \pm 50 \text{ cm}^{-1}$  was determined by the relation of the line intensity to the temperature.

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USSR

STEPANOV, V. G., et al, Solid State Physics; January, 1970; pp 55-8

A line related to the level with  $S = 1$  for this same pair was isolated on an eight-millimeter spectroscope with  $H \parallel C_3$  according to the temperature relationship. The position of the line agreed well with the calculated position.

The authors thank S. A. Al'tshuler for his interest and discussion of the work and I. Fattakhov and R. Yu. Abdulsabirov for their assistance. The article includes three equations. There are 8 references.

USSR

UDC 533.411+541.1

OVCHINNIKOV, I. V., GAYNULIN, I. F., GARIF'YANOV, N. S., Corresponding Member of the Academy of Sciences USSR and KOZYREV, B. M., Kazan Physico Technical Institute, Kazan, Academy of Sciences USSR

"The Nature of Superfine Interaction with  $P^{31}$  in Dithiophosphenes  $Cu(II)$ ,  $VO(II)$ ,  $CrO(III)$ ,  $MoO(III)$  and  $VO(III)$ "

Moscow, Doklady Academy Nauk SSSR, Vol 191, No 2, 11 Mar 70, pp 395-398

Abstract: One of the significant characteristics of electron paramagnetic resonance is the possibility of observing the spectra supplementary superfine structures (SSFS) in which there is interaction of an unpaired electron with nuclear magnetic moments of atoms, situated considerable distance from the paramagnetic "ion". The mechanism of such a distant dislocation of the unpaired electron in many cases is still not clear and investigation of it is necessary both for taking from SSFS information about the nature of chemical bonds in complex compounds, and also for deeper understanding of the nature of superfine interaction itself.

1/2

USSR

OVCHINNIKOV, I. V., et al., Doklady Academy Nauk SSSR, Vol 191, No 2, 11 Mar 70, pp 395-398

In the article the authors review experimental results obtained by others in the investigation of EPR of dithiophosphene complexes of Cu(II), VO(II), CrO(III), MoO(III), and WO, as well as give the following results of their investigation of the nature of SSFS of  $P^{31}$  on the compounds Cu(II) and VO(II): (a) the appearance of SSFS of  $P^{31}$  especially in the complex VO(II), of extremely large intensity; (b) significant distinction in the magnitude of the superfine interaction isotropic constant  $A^P$  in Cu compounds in comparison with analogous V compounds; (c) little anisotropy of superfine interaction; (d) the constant  $A^P$  increases during substitution of less electronegative radicals for greater electronegative ones. Data on the other investigated compounds is also given.

2/2



1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--NATURE OF PHOSPHORUS, 31 HYPERFINE INTERACTION IN DITHIOPHOSPHINE  
COMPLEXES OF CU PRIME2 POSITIVE, VO PRIME2 POSITIVE, CRD PRIME3  
AUTHOR--(04)-OVCHINNIKOV, I.V., GAYNULIN, I.F., GARIFYANOV, N.S., KQZYREV,  
B.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(2), 395-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--PHOSPHORUS ISOTOPE, PHOSPHORUS SULFIDE, COPPER COMPLEX,  
CHROMIUM COMPLEX, MOLYBDENUM COMPLEX, TUNGSTEN COMPOUND, VANADIUM  
COMPLEX, HYPERFINE STRUCTURE, MOLECULAR ORBITAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3008/1508

STEP NO--UR/0020/70/191/002/0395/0398

CIRC ACCESSION NO--AT0138508

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70  
CIRC ACCESSION NO--AT0138508  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TABULATION OF PRIME31 P FINE  
STRUCTURE LINES IS GIVEN FOR THE COMPLEXES OF CU PRIME2 POSITIVE, CR3  
PRIME3 POSITIVE, MOO PRIME3 POSITIVE, WO PRIME3 POSITIVE, AND VO PRIME2  
POSITIVE WITH R SUB2 PS SUB2 PRIME NEGATIVE ION IN WHICH R IS A PR, PH,  
ET, OR ETO GROUP. IN THE VANADYL COMPD. A GREAT DEAL OF FINE STRUCTURE  
ARISES FROM PRIME31 P. THE FINE STRUCTURE IS EXPLAINED IN TERMS OF MO  
THEORY. FACILITY: KAZAN. FIZ. TEKH. INST., KAZAN, USSR.

UNCLASSIFIED

USSR

UDC 621.357.1.035.2.:661.418(088.8)

KHALILOV, V. R., ABUBAKIROVA, F. S., GELIYEVA, T. N., GARIEZYANOV, A. G.,  
VALITOV, R. B., Sterlimakov Chemical Factory

"A Process for Impregnating Graphite Objects"

USSR Author's Certificate No 345093, Filed 24 Mar 70, published 10 Aug 72  
(from Referativnyy Zhurnal -- Khimiya, No 8(III), 1973, Abstract No 8L256P)

Translation: A process is patented for the impregnation of graphite articles (rods used during the electrolysis of NaCl and the production of chlorine and sodium hydroxide) by polymerized flax oil in the presence of a catalyst. It is improved in that in order to increase strength and chemical stability of the articles, a peroxide compound, for example  $H_2O_2$ , was used as a catalyst.

The process was carried out in the normal manner. The flax oil was first polymerized in the presence of an initiator - 1 to 3 weight %  $H_2O_2$  (30%) at 80°

for 10-20 hours. The graphite rod was impregnated with a newly prepared polymer at 80° for 3 hours. After which, it was dried at the same temperature for 4 hours. Drying of the oil resulted in its uniformity in the graphite rod, chlorine and acid at high temperatures. The rod, impregnated with wax, was destroyed after 6 months in the vat at a temperature of 90°. The rods  
1/2

USSR

KHALILOV, V. R., et al., USSR Author's Certificate No 345093, filed 24 Mar 70, published 10 Aug 72

impregnated with the polymerized flax under the same conditions did not show signs of destruction.

2/2

1/2 010 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--1,5,9,CYCLODODECATRIENE -U-  
AUTHOR-(03)-GARIFZYANOV, G.G., VALITOV, R.B., BIKBULATOV, I.KH.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 263,588  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--10FEB70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CYCLIC GROUP, BUTADIENE, CATALYTIC ORGANIC SYNTHESIS, CHEMICAL  
PATENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/1589 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0135230  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AA0135230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPD. IS PREPD. BY  
TREATING 1,3,BUTADIENE WITH A CATALYTIC SYSTEM CONTG. NI HALIDE AND  
TRIISOBUTYL ALUMINUM AT 100-30DEGREES UNDER INTENSIVE MIXING.  
FACILITY: STERLITAMAKSKIY KHIMICHESKIY ZAVOD.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--COMPOSITION FOR REMOVING LAC DYE COATINGS -U-

AUTHOR--(05)-VOLODIN, N.L., GARIFZYANOV, G.G., RAKHIMOV, R.R., POTAPOV,  
A.M., SHAROV, V.G.  
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,341  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--LACQUER, DYE, ORGANIC SOLVENT, CHEMICAL PATENT, POLYETHYLENE,  
POLYAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/1766

STEP NO--UR/0482/70/00G/000/0000/0000

CIRC ACCESSION NO--AA0137006

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70  
CIRC ACCESSION NO--AA0137006  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPN. CONSISTS OF  
7:3-5:5 VOL. POLYETHYLENEPOLYAMINES AND ETOH.

UNCLASSIFIED



1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--CONVERSION OF VINYL CYCLOHEXANE ON A PALLADIUM CATALYST -U-  
AUTHOR-(03)-GARIFZYANOV, G.G., BIKBULATOV, I.KH., VALITOV, R.B.  
COUNTRY OF INFO--USSR  
SOURCE--NEFTEKHIMIYA 1970, 10(11), 28-33  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CYCLOHEXANE, PALLADIUM, CATALYST ACTIVITY, CYCLOHEXENE,  
ETHYLBENZENE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRADE--1997/0573 STEP NG--UR/0204/70/010/001/0028/0033  
CIRC ACCESSION NO--AP0119491  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119491

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 4-VINYLCYCLOHEXENE (I) WAS EVAPD. AT 135DEGREES; MIXED WITH 4 MOLES N AND PASSED THROUGH HOT 0.8-1.2PERCENT PD-C CATALYST (30 ML) IN A QUARTZ TUBE (DIAM. 2 CM), AT A CONST. RATE OVER 40-120 MIN (PRIOR TO THE RUNS THE CATALYST WAS ACTIVATED WITH H<sub>2</sub> 3 HR AT 135DEGREES). EVERY 5-10 MIN THE REACTOR EFFLUENT WAS ANALYZED CHROMATOGRAPHICALLY. CONVERSION OF I WAS STUDIED AT A SPACE VELOCITY OF 0.1-3 ML-MIN, AND AT TEMPS. 135 TO 220DEGREES. THE EFFLUENT PRODUCTS CONTAINED ETHYLCYCLOHEXENE (II), ETHYLBENZENE (III), AND ETHYLCYCLOHEXANE (IV). THE CONVERSION OF I INCREASED WITH INCREASING CATALYST TEMP. THE AMT. OF INTERMEDIATE II IN THE EFFLUENT INCREASED RAPIDLY TO A MAX. AT 150-50DEGREES, THEN DECREASED (CONVERTED INTO III AND IV). THE WT. RATIO OF III TO THE SUM OF II AND IV IN THE PRODUCTS OF 130-50DEGREES RUNS WAS 1.3-1.5; IT WAS 3.1-3.7 AT 210DEGREES. ETHYLCYCLOHEXADIENE WAS NOT DETECTED, BUT WAS PROPOSED AS AN INTERMEDIATE. FACILITY: STERLITAMAKSKII KHIM. ZVOD, STERLITAMAK, USSR.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--DITHIOETHYLENE GLYCOL COMPLEXES OF CHROMIUM(V) AND MOLYBDENUM(V)  
STUDIED BY EPR -U-  
AUTHOR--GARIFYANOV, N.S.  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1368-9 (PHYS CHEM)  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHROMIUM COMPLEX, MOLYBDENUM COMPLEX, EPR SPECTRUM, ETHYLENE  
GLYCOL, ELECTROPHORESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1995/1578 STEP NO--UR/0020/70/190/006/1368/1369  
CIRC ACCESSION NO--AT0116986  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0116986

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EPR STUDIES OF DITHIOETHYLENE GLYCOL COMPLEXES OF CR(V) AND MO(V) WERE CONDUCTED ON LIQ. SOLNS. AT 290DEGREESK AND IN FROZEN FORM AT 77DEGREESK AT UPSILON EQUALS 91,616 MHZ. THE SOLVENT WAS HCONME SUB2. THE PARAMETERS OF THE SPECTRA OF THESE COMPLEXES AS WELL AS THOSE OF THE ETHYLENE GLYCOL COMPLEXES OF CR(V) AND MO(V) ARE TABULATED. THE DITHIOETHYLENE COMPLEXES HAVE C SUB4UPSILON SYMMETRY. SUCH SYMMETRY IS OBTAINED IF 4 S ATOMS OF THE DITHIOETHYLENE GLYCOL LIGANDS ARE LOCATED AROUND THE METAL IN THE FORM OF A SQUARE AND IF THE METAL O BOND IS DIRECTED PERPENDICULAR TO THE PLANE OF THIS SQUARE. ELECTROPHORESIS STUDIES SHOW THAT THE COMPLEX CARRIES A NEG. CHARGE. FACILITY: FIZ.-TEKH. INST., KAZAN, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ELECTRON PARAMAGNETIC RESONANCE OF PYRIDINE AND THIOCYANATE  
NITROSYL COMPLEXES OF CHROMIUM I -U-  
AUTHOR--(02)-GARIFYANOV, N.S., LUCHKINA, S.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 455-6

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--CHROMIUM COMPLEX, PYRIDINE, THIOCYANATE, NITROSO COMPOUND,  
CHROMIUM ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0636

STEP NO--UR/0062/70/000/002/0455/0456

CIRC ACCESSION NO--AP0119548

UNCLASSIFIED

2/2 013

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PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119548

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EPR SPECTRA WERE REPORTED FOR THE NITROSYL COMPLEX OF CR(II) WITH PYRIDINE AT 77DEGREES AND 3150DEGREESK. THE THIOCYANATE COMPLEX OF CR(II) IN ME SUB2 CO GAVE AN ISOTROPIC SPECTRUM AT 290DEGREESK THAT WAS SIMILAR TO THE ACTUAL SPECTRUM OF THE NITROSYL COMPLEX WITH PYRIDINE. AT 77DEGREESK BOTH SPECTRA DISPLAY A DEGREE OF AXIAL SYMMETRY OF THE IMMEDIATE ENVIRONMENT OF THE COMPLEX FORMER. THE FINE STRUCTURE SPLITTING FROM PRIME14 N NUCLEUS OF THE NO GROUP AND OF THE EQUATORIAL AND AXIAL LIGANDS OF PYRIDINE AND THIOCYANATE UNITS, AS WELL AS THAT PRODUCED BY THE PRIME53 CR ISOTOPE IS TABULATED.

FACILITY: KAZAN. FIZ.-TEKH. INST., KAZAN, USSR.

UNCLASSIFIED

GARIN, B. I.

Chapter 7

DETERMINING GEOMETRIC DIMENSIONS AND DISTRIBUTION OF CRATERS TRAVERSED BY "LUNOKHOD-1" ON LUNAR SURFACE

B. I. Garin, A. K. Leonovich, F. P. Pavlov, V. D. Georgiyev, and P. S. Semenov

Measurement of the angles of longitudinal  $\alpha$  and transverse  $\gamma$  tilting of the Lunokhod body and continuous transmission of this telemetric information to the earth make it possible at any moment during a communications contact to determine the slope of the lunar surface at the corresponding points where the Lunokhod is situated. In turn, measurement of the traversed path  $S$  and the course  $\beta$  of the Lunokhod makes it possible to determine the lunar surface slopes as a function of the traversed path, reduced to the trajectory of its movement, beginning at the time of descent from the lunar station landing place.

Investigations have demonstrated that the dimensions of craters -- diameter  $D$ , depth  $H$ , slope steepness  $\psi$ , height  $h_{wall}$  and width  $l$  of the wall, if one exists, as well as their position relative to the Lunokhod movement trajectory, can be computed from the results of changes in  $S$ ,  $\alpha$  and  $\gamma$  with sufficient accuracy. For this purpose a method was developed for determining the dimensions of craters on the lunar surface traversed by the Lunokhod on the basis of telemetric information from the sensors registering the Lunokhod path, backing and fore-to-aft listing.

The method has two modifications, geometric and analytic, the latter making it possible to solve the problem of determining the parameters of lunar craters with a digital computer and to ascertain the characteristics of lunar relief in tempo with Lunokhod movement.

Figure 43 shows the trajectory of Lunokhod movement across a class-B crater at some distance from its center (c) and gives the results of measurements of fore-to-aft tilting  $\alpha$  and banking  $\gamma$  of the Lunokhod (b,c) obtained through telemetric channels from aboard the Lunokhod, as well as depicting (solid line) the longitudinal profile of the lunar surface, situated beneath the center of the Lunokhod, obtained by a graphic integration of the fore-to-aft listing along the traversed path (d).

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"LUNOKHOD-1"

Translation of Russian-Language Monograph  
Fizmatgiz Press, Moscow, 1971, 112 pages, 4 June 71  
Leningrad, 1971, signed by P. S. Semenov;  
comp. editor Academician A. P. Vinogradov;  
Mashinostroeniye Press, Moscow 128 pp.

SPRS 54,525  
22 November 1971

GARIN, V. M.

Biophysiology

SOI JPRS 55100

4 Feb 72

UDC 612.014.421.8:621.3.035.2

USE OF EMBEDDED ELECTRODES AND SENSORS IN CHRONIC EXPERIMENTS ON RATS

Article by N. T. Svitunov, V. M. Garin and N. I. Kostarev; Moscow, *Kosmicheskaya Biologiya i Meditsina*, Leningrad, Vol 5, No 6, 1971, submitted for publication 9 March 1970, pp 44-47

**Abstract:** This paper describes electrodes used to register the ECG and EOG, temperature sensors, a special harness fixed to the rat body immediately after operation, as well as procedures for preparing white rats for chronic experiments. The procedure and harness help to avoid destruction of wires by the animals and to prevent any complications in the postoperation period.

White rats are readily available and convenient objects for conducting large-scale chronic experiments. However, the absence of readily available and reliable instrumental methods for obtaining various kinds of physiological information limits the possibilities of researchers in prolonged observations of the state of these animals, especially under special conditions.

At the present time, both in the clinic and in experiments with large animals, physiological information is obtained using surface and embedded electrodes and sensors with wire leads and also using embedded radio transmitters or contactless sensors (A. A. Kiselev, et al.; B. I. Kadykov and V. I. Bazanin; Richardson). The use of surface electrodes and sensors during prolonged chronic experiments with rats with a fixed harness on the body is difficult due to their small size and the exceptional mobility of the skin on these animals. Presently existing embedded radio transmitters are also ill-suited for use on rats during prolonged experiments due to their insignificant power resources (Ye. B. Babitskiy and V. V. Parin). Moreover, contactless sensors, despite a number of advantages, cannot ensure the collection of individual types of sufficiently high-quality information.

Accordingly, the most acceptable method for obtaining the necessary information on the condition of rats in a chronic experiment still remains embedding of electrodes and sensors with wires. However, the use of this



Acc. Nr: **AP0047326**

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PRIMARY SOURCE: *Ukrayns'kiy Biokhimichniy Zhurnal*, 1970,  
Vol 42, Nr 1, pp 50-55

**DYNAMICS OF ELECTROLYTE DISTRIBUTION  
AND OXYGEN CONSUMPTION IN SLICES OF THE RAT BRAIN CORTEX  
UNDER VARIOUS INCUBATION CONDITIONS**

N. A. Emelyanov, I. A. Garina

The I. P. Pavlov Institute of Physiology, Academy of Sciences, USSR, Leningrad

**Summary**

The slices were cut with a narrow strip of blade in a special holder. "Krebs artificial serum" and natural blood plasma were used as incubation media. Dynamics of respiration, water and electrolytes distribution in inulin and non-inulin space were measured for 6 hours. The respiration in the media above was more than 200 micro-moles of oxygen per gramm per hour, being near the values in vivo. A good steady state of electrolyte distribution was observed in plasma for the whole period, in Krebs serum it continued only for 2—2.5 hours.

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24 2

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--INFLUENCE OF POSTTREATMENT STORAGE ON THE FREQUENCY OF ETHYLENIMINE  
INDUCED CHROMOSOMAL ABERRATIONS AND GENE MUTATIONS IN BARLEY -U-  
AUTHOR--(02)--GARINA, K.P., ROMANOVA, N.I.  
COUNTRY OF INFO--USSR  
SOURCE--MOL. GEN. GENET. 1970, 106(2), 93-105  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PLANT GENETICS, MUTAGEN, ETHYLENE, IMINE, CHLOROPHYLL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0056 STEP NO--BU/0000/70/106/002/0093/0105  
CIRC ACCESSION NO--AP0125891  
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125891

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DRY SEEDS OF SPRING BARLEY VARIETY MOS 121 WERE INDUCED TO MUTATE BY SOAKING FOR 3 HR IN ETHYLENIMINE (2.3 TIMES 10 PRIME NEGATIVE3 OR 9.3 TIMES 10 PRIME NEGATIVE3,MU), WASHED IN RUNNING TAP WATER FOR 30 MIN, DRIED, AND PLACED IN A DESICCATOR OVER GRANULATED KOH. GERMINATED SEEDS WERE EXAMD. AFTER TREATMENT OR STORAGE FOR 6-46 DAYS. CHROMOSOME CHANGES WERE STUDIED DURING ANAPHASE WITH PREPNS. FROM SHOOT TISSUE. A WAVE TYPE MUTABILITY EFFECT WAS OBSERVED, WITH STATISTICALLY SIGNIFICANT CHANGES IN THE LEVEL OF CHROMOSOME REARRANGEMENTS, OF CHLOROPHYLL MUTATIONS, DEATH RATE AND FERTILITY OF M1 PLANTS. THE MAX. GENETIC EFFECT WAS FOUND AT THE 18TH DAY OF STORAGE AND AFTER THIS TIME POTENTIAL CHANGES WERE REPAIRED. THE CHLOROPHYLL MUTATIONS EXHIBITED BOTH CHANGING FREQUENCY AND SPECTRUM. THUS, BOTH GENE AND CHRCMOSOME REARRANGEMENTS APPEAR FIRST AS POTENTIAL CHANGES.

FACILITY: INST. GEN. GENET., MOSCOW, USSR.

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